

23rd October

Higher Plus 5-a-day



Corbettmaths

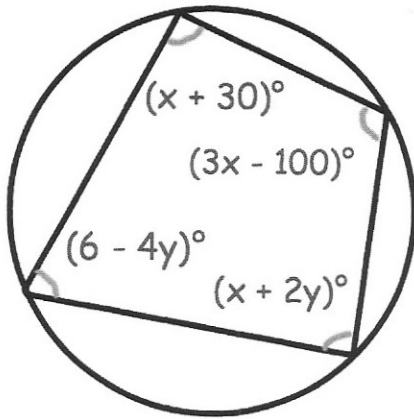
James is creating a 8-digit code to lock his iPad.

He does not repeat any digit.

How many possible codes can James create?

$$10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3$$

$$1814400$$



Shown is a cyclic quadrilateral.

Work out the values of  $x$  and  $y$ .

$$x = 82, y = -7$$

$$2x + 2y + 30 = 180$$

$$2x + 2y = 150$$

$$3x - 4y - 94 = 180$$

$$3x - 4y = 274$$

$$4x + 4y = 300$$

$$7x = 574$$

$$x = 82, y = -7$$

Prove  $(n + 10)^2 - (n + 5)^2$  is always a multiple of 5

$$n^2 + 10n + 10n + 100$$

$$- n^2 + 5n + 5n + 25$$

$$10n + 75 = 5(2n + 15)$$

$\therefore$   
multiple of 5

The graph of  $y = c + d^x$  passes through the points (1, 7) and (3, 127).

$c$  and  $d$  are positive integers.

Find the values of  $c$  and  $d$

$$7 = c + d$$

$$127 = c + d^3$$

$$c = 2, d = 5$$